IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) An optical disc-writing parameters optimizing system, comprising:

an acquiring device for acquiring ~~the~~ variation amounts of ~~the~~ mark runlengths from target values;

a confirming device for confirming ~~the~~ modulation amounts of ~~the~~ writing parameters; and

a modulating device for modulating ~~the~~ values of said writing parameters including simultaneously optimizing parameters of a plurality of laser pulses including power levels or duration of the plurality of laser pulses to make the mark runlengths reach the target values, the power levels including writing power, erasing power, cooling power and power to adjust back edges of marks

written on an optical disc so that the mark runlengths are closer to the target values.

2.(Original) The device according to claim 1, further comprising a judging device for judging whether it is necessary to optimize.

3.(Currently Amended) A method for optimizing ~~the~~ optical disc-writing parameters, comprising the ~~following steps~~ acts of:

a) acquiring ~~the~~ variation amounts of ~~the~~ mark runlengths from target values;

b) confirming ~~the~~ modulation amounts of ~~the~~ writing parameters based on ~~the~~ a relationship between the variation amounts of the mark runlengths and the modulation amounts of the writing parameters; and

c) modulating said ~~parameters.~~

~~d)~~ writing parameters, including simultaneously optimizing parameters of a plurality of laser pulses including power levels or duration of the plurality of laser pulses to make the mark runlengths reach the target values, the power levels including

writing power, erasing power, cooling power and power to adjust back edges of marks written on an optical disc so that the mark runlengths are closer to the target values.

4. (Currently Amended) The method according to claim 3, wherein the ~~step~~ act (b) ~~further comprising~~ comprises the acts of:

(b1) confirming ~~the~~ variation amounts of ~~the~~ physical mark lengths based on ~~the~~ relationship between the variation amounts of the mark runlengths and the variation amounts of the physical mark lengths; and

(b2) confirming the modulation amounts of the writing parameters based on the relationship between the variation amounts of the physical mark lengths and the modulation amounts of the writing parameters.

5. (Currently Amended) The method according to claim 4, wherein the relationship between the variation amounts of the mark runlengths and the variation amounts of the physical mark lengths in ~~step~~ act (b1), ~~comprising:~~

~~the influence~~ comprises an influence relationship of the variation amounts of the physical mark lengths on the variation amounts of the mark runlengths.

6.(Currently Amended) The method according to claim 5, wherein the influence relationship between the variation amounts of the physical mark lengths on the variation amounts of the mark runlengths ~~comprising~~ comprises:

the relationships between the variation amounts of the physical mark lengths and the variation amounts of the mark runlengths, as well as ~~the~~ characterization amounts of ~~the~~ influence degrees of the variation amounts of the physical mark lengths on the variation amounts of the mark runlengths.

7.(Currently Amended) The method according to claim 6, wherein said characterization amounts of the influence degrees ~~including:~~

~~the~~ including influence coefficients of the variation amounts of the physical mark lengths on the variation amounts of the mark runlengths.

Claim 8 (Canceled)

9.(Currently Amended) ~~The method according to claim 7,~~ A method for optimizing the optical disc-writing parameters, comprising the acts of:

a) acquiring the variation amounts of the mark runlengths;

b) confirming the modulation amounts of the writing parameters based on the relationship between the variation amounts of the mark runlengths and the modulation amounts of the writing parameters; and

c) modulating said writing parameters,

wherein the relationship between the variation amounts of the mark runlengths and ~~the~~ variation amounts of ~~the~~ physical mark lengths includes the following formula:

$$\begin{bmatrix} dPhyL_1 \\ dPhyL_2 \\ dPhyL_3 \\ \vdots \\ dPhyL_j \\ \vdots \\ dPhyLM \end{bmatrix} = \begin{bmatrix} v_{11} & v_{12} & v_{13} & \cdots & v_{1j} & \cdots & v_{1M} \\ v_{21} & v_{22} & v_{23} & \cdots & v_{2j} & \cdots & v_{2M} \\ \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots \\ v_{i1} & v_{i2} & v_{i3} & \cdots & v_{ij} & \cdots & v_{iM} \\ \vdots & \vdots & \vdots & \cdots & \vdots & \ddots & \vdots \\ v_{N1} & v_{N2} & v_{N3} & \cdots & v_{Nj} & \cdots & v_{Nm} \end{bmatrix}^{-1} \bullet \begin{bmatrix} \Delta MarkRL_1 \\ \Delta MarkRL_2 \\ \vdots \\ \Delta MarkRLi \\ \vdots \\ \Delta MarkRL_N \end{bmatrix}$$

wherein the writing parameters which need optimization are j=1, 2, . . . M;

$dPhyL_j$ represents the variation amount of the physical length of the mark, which is directly influenced by the j^{th} writing parameter which needs ~~optimization.~~ Optimization;

ΔmarkRLi represents the measured i^{th} variation amount of the mark runlength;

in the transformation matrix, the coefficient v_{ij} is ~~the~~ an influence coefficient, which represents the influence of parameter j on mark i~~, v_{ij}=-jp+1 when parameter j influences mark i directly; v_{ij}=-jp+1 when parameter j does not influence mark i directly; jp represents the percentage of the numbers of the mark samples influenced directly by the j^{th} writing parameter which needs optimization in the whole mark samples~~.

10.(Currently Amended) The method according to claim 9, wherein the determinant of said transformation matrix of the influence coefficients doesn't equal zero, which is written as:

$$\det \begin{bmatrix} v_{11} & v_{12} & v_{13} & \cdots & v_{1j} & \cdots & v_{1M} \\ v_{21} & v_{22} & v_{23} & \cdots & v_{2j} & \cdots & v_{2M} \\ \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots \\ v_{i1} & v_{i2} & v_{i3} & \cdots & v_{ij} & \cdots & v_{iM} \\ \vdots & \vdots & \vdots & \cdots & \vdots & \ddots & \vdots \\ v_{N1} & v_{N2} & v_{N3} & \cdots & v_{Nj} & \cdots & v_{Nm} \end{bmatrix} ~~\neq 0~~ \neq 0.$$

11.(Currently Amended) ~~The method according to claim 4, A~~ method for optimizing the optical disc-writing parameters, comprising the acts of:

a) acquiring the variation amounts of the mark runlengths;

b) confirming the modulation amounts of the writing parameters based on the relationship between the variation amounts of the mark runlengths and the modulation amounts of the writing parameters; and

c) modulating said writing parameters;

wherein the act (b) comprises the acts of:

(b1) confirming variation amounts of physical mark lengths based on relationship between the variation amounts of the mark runlengths and the variation amounts of the physical mark lengths; and

(b2) confirming the modulation amounts of the writing parameters based on the relationship between the variation amounts of the physical mark lengths and the modulation amounts of the writing parameters; and

wherein the ~~step~~ act (b2) ~~comprising the following steps~~ comprising the acts of:

(b2.1) doing writing experiments with a plurality of the parameter values (Pr) in order to optimize the writing parameter (r);

(b2.2) measuring the variation amount ΔMarkRLs of the length of the mark (s)'s movement, which is influenced directly by the writing parameter (r), to acquire the function relationship ΔMarkRLs=f1(Pr) between ΔMarkRLs and the parameter value (Pr);

(b2.3) measuring the variation amount ΔmarkRLt of the length of the mark (t)'s movement, which is not influenced directly by the writing parameter (r), to acquire the function relationship ΔmarkRLt=f2(P_r) between ΔmarkRLt and the parameter value (Pr);

(b2.4) subtracting ~~the~~ result of ~~step~~ the act (b2.3) from ~~the~~ result of ~~step~~ the acts (b2.2), to acquire the relationship dPhyLr=ΔMarkRLs-ΔMarkRL t=f1(P_r)-f2(Pr)=f1-2(Pr)=f(Pr0+dPr) between the variation amount (dPhyLr) of the physical length of the mark and the parameter value (Pr) which needs optimization (wherein Pr0 is the original value of the writing parameter(r), dPr is the variation amount of the parameter value).

12.(Currently Amended) The method according to claim 3, further comprising ~~a step:~~

~~writing~~ the act of writing a random data on said optical disc.

13.(Currently Amended) The method according to claim 3, further comprising ~~a step:~~

~~comparing~~ the act of comparing the variation amounts of each mark runlength with the predetermined optimization aim, to confirm if the continued optimization is needed.

14.(Currently Amended) The method according to claim 13, further comprising ~~a step:~~

~~confirming~~ the act of confirming the current parameter value as the parameter value which will be written to optical disc when the continued optimization is not needed.

Claim 15 (Canceled)

16.(Previously Presented) The method according to claim 3, wherein said writing parameters comprise the starting time and the stopping time of the laser pulses.

17.(Currently Amended) The method according to claim 3, wherein ~~the~~ a square-shaped writing strategy, "dog frame" wave-shaped writing strategy, "1T writing strategy" or "2T writing strategy" are adopted for said optical disc-writing.